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**A SYSTEM AND PROCESS FOR BOOTSTRAP INITIALIZATION  
OF NONPARAMETRIC COLOR MODELS**

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**ABSTRACT OF THE INVENTION**

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The present invention is embodied in a system and process for automatically learning a reliable color-based tracking system. The tracking system is learned by using information produced by an initial object model in combination with an initial tracking function to probabilistically determine the configuration of one or more target objects in a temporal sequence of images, and a data acquisition function for gathering observations relating to color in each image. The observations gathered by the data acquisition function include information that is relevant to parameters desired for a final color-based object model. A learning function then uses probabilistic methods to determine conditional probabilistic relationships between the observations and probabilistic target configuration information to learn a color-based object model automatically tailored to specific target objects. The learned object model is then used in combination with the final tracking function to probabilistically locate and track specific target objects in one or more sequential images.

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